What is claimed is:

1. An apparatus for reading a latent image stored on a storage layer radiation screen, the apparatus comprising:

a light source adapted to provide excitation light across a width of a storage layer radiation screen; and

an excitation and image acquisition station comprising a mechanism for shaping the excitation light as an elongated region of excitation light across the width of the screen, optics for collecting a region of light emitted by a lateral strip of the screen excited by the elongated region of excitation light, and an elongated pixelated sensor array positioned to capture from the optics the region of light emitted by the screen;

wherein the latent image stored on the screen is read by collecting and capturing light emitted from the screen as the screen moves past the excitation and image acquisition station.

2. An apparatus according to claim 1 wherein the elongated pixelated sensor array is a 1 x n array where n is greater than 1.

3. An apparatus according to claim 1 wherein the elongated pixelated sensor array is a m x n array where m and n are each greater than 1.

4. An apparatus according to claim 1 wherein the elongated pixelated sensor array comprises an array of 1 x n pixels where n is at least 2048.

5. An apparatus according to claim 1 wherein the elongated pixelated sensor array comprises an array of m x n pixels where m is at least 2 and n is at least 2048.

6. An apparatus according to claim 1 wherein the elongated pixelated sensor array is a CMOS sensor array.

7. An apparatus according to claim 1 wherein the elongated pixelated sensor array is a CMOS sensor array optimized for detection of light at the emission wavelength.

8. An apparatus according to claim 1 wherein the elongated pixelated sensor array is a CMOS sensor array optimized such that its sensitivity to the excitation wavelength and infrared is minimized.

9. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array.

10. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array, the region of light collected by the optics being focused upon at least one of the two CMOS sensor arrays.

11. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array, the region of light collected by the optics being focused upon the at least two CMOS sensor arrays.

12. An apparatus according to claim 1 wherein the pixelated sensor array is a CMOS sensor array, the excitation and image acquisition station further comprising a filter which filters light other than light emitted by the screen from the CMOS sensor array.

13. An apparatus according to claim 1 wherein the mechanism for causing the screen to move relative to the platform is a roller assembly.

14. An apparatus according to claim 1 wherein the mechanism for causing the screen to move relative to the platform is a belt.

15. An apparatus according to claim 1 wherein the light source is a broad band light source.

16. An apparatus according to claim 15 wherein a filter is employed with the broad band light source which removes light that does not fall within a wavelength range of an absorption spectrum of the screen.

17. An apparatus according to claim 1 wherein the excitation light contacting the screen comprises the wavelength range of 650 to 680 nanometers.

18. An apparatus according to claim 1 wherein the light source comprises a member of the group consisting of a line generator, holographic optic, rotating prism, cold cathode fluorescent lamp, cylindrical lens and a row of light emitting diodes.

19. An apparatus according to claim 1 wherein the excitation and image acquisition station excites a lateral strip of the screen having of width of less than 100 μm at any instant.

20. An apparatus according to claim 1 wherein the excitation and image acquisition station excites a lateral strip of the screen having of width of less than 80 μm at any instant.

21. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises a flange which functions to narrow a width of the region of excitation light formed across the width of the screen.

22. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises a cylindrical lens which functions to sharpen the focus of the excitation light.

23. An apparatus according to claim 1 wherein the excitation and image acquisition station comprises a flange which functions to create a sharp leading edge of the excitation light.

24. An apparatus according to claim 1 wherein the optics of the excitation and image acquisition station comprises an array of gradient index fibers.

25. An apparatus according to claim 1 wherein the optics of the excitation and image acquisition station comprises an array of gradient index fibers, the array being at least 2 fibers wide in the direction which the screen is moved.

26. An apparatus according to claim 1 wherein the optics of the excitation and image acquisition station comprises an array of gradient index lenses, the array being at least 3 lenses wide in the direction which the screen is moved.

27. An apparatus for reading a latent image stored on a storage layer radiation screen, the apparatus comprising:

a platform comprising a mechanism for causing a storage layer radiation screen comprising a latent radiation image to move from a proximal side to a distal side of the platform;

a light source adapted to provide excitation light across a width of the screen; and

an excitation and image acquisition station positioned adjacent the platform, the station comprising a mechanism for shaping the excitation light as an elongated region of excitation light across the width of the screen, optics for collecting a region of light emitted by a lateral strip of the screen excited by the elongated region of excitation light, and an elongated pixelated sensor array positioned to capture from the optics the region of light emitted by the screen;

wherein the latent image stored on the screen is read by collecting and capturing light emitted from the screen as the screen moves past the excitation and image acquisition station.

28. An apparatus for reading a latent image stored on a storage layer radiation screen, the apparatus comprising:

a rotatable drum on which a storage layer radiation screen comprising a latent radiation image may be positioned;

a light source adapted to provide excitation light across a width of the screen; and

an excitation and image acquisition station positioned adjacent the rotatable drum, the station comprising a mechanism for shaping the excitation light as an elongated region of excitation light across the width of the screen, optics for collecting a region of light emitted by a lateral strip of the screen excited by the elongated region of excitation light, and an elongated pixelated sensor array positioned to capture from the optics the region of light emitted by the screen;

wherein the latent image stored on the screen is read by collecting and capturing light emitted from the screen as the rotatable drum rotates and causes the screen to move past the excitation and image acquisition station.

29. An apparatus for reading a latent image stored on a storage layer radiation screen, the apparatus comprising:

a platform comprising a mechanism for causing a storage layer radiation screen comprising a latent radiation image to move from a proximal side to a distal side of the platform;

a light source adapted to provide excitation light across a width of the screen; and

an excitation and image acquisition station positioned adjacent the platform, the station comprising a mechanism for shaping the excitation light as a region of excitation light across the width of the screen, optics for collecting the light emitted by a corresponding region of the screen excited by the region of excitation light, and an m x n pixelated sensor array positioned to capture from the

optics the region of light emitted by the screen;

wherein the latent image stored on the screen is read by collecting and capturing light emitted from the screen as the screen moves past the excitation and image acquisition station in a time-delay integration mode.

30. An apparatus for reading a latent image stored on a storage layer radiation screen, the apparatus comprising:

a platform comprising a mechanism for causing a storage layer radiation screen comprising a latent radiation image to move from a proximal side to a distal side of the platform;

a light source adapted to provide excitation light across a width of the screen; and

an excitation and image acquisition station positioned adjacent the platform, the station comprising a mechanism for shaping the excitation light as a region of excitation light across the width of the screen, optics for collecting the light emitted by a corresponding region of the screen excited by the region of excitation light, and an m x n pixelated sensor array positioned to capture from the optics the region of light emitted by the screen;

wherein the latent image stored on the screen is read by capturing light emitted from the screen as the screen moves past the excitation and image acquisition station in a step-and-repeat mode.

31. A method for reading a latent image stored on a storage layer radiation screen, the method comprising:

delivering an elongated region of excitation light;

moving a storage layer radiation screen past the elongated region of excitation light, the excitation light causing light to be emitted from the screen corresponding to portions of the latent image stored on the screen;

employing optics to collect light emitted from the storage layer radiation screen as the screen is moved past the elongated region of excitation light; and

focusing the collected light from the optics on an elongated pixelated sensor array positioned to capture from the optics the region of light emitted by the screen.

32. A method according to claim 31 wherein the elongated pixelated sensor array is a 1 x n array where n is greater than 1.

33. A method according to claim 31 wherein the elongated pixelated sensor array is a m x n array where m and n are each greater than 1.

34. A method according to claim 31 wherein the elongated pixelated sensor array comprises an array of 1 x n pixels where n is at least 2048.

35. A method according to claim 31 wherein the elongated pixelated sensor array comprises an array of m x n pixels where m is at least 2 and n is at least 2048.

36. A method according to claim 31 wherein the elongated pixelated sensor array is a CMOS sensor array.

37. A method according to claim 31 wherein the elongated pixelated sensor array is a CMOS sensor array optimized for detection of light at the emission wavelength.

38. A method according to claim 31 wherein the elongated pixelated sensor array is a CMOS sensor array optimized such that its sensitivity to the excitation wavelength and infrared is minimized.

39. A method according to claim 31 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array.

40. A method according to claim 31 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array, the region of light collected by the optics being focused upon at least one of the two CMOS sensor arrays.

41. A method according to claim 31 wherein the excitation and image acquisition station comprises at least two CMOS sensor arrays positioned in parallel with each other, at least one of which serving as the elongated pixelated sensor array, the region of light collected by the optics being focused upon at least two CMOS sensor arrays.

42. A method according to claim 31 wherein the pixelated sensor array is a CMOS sensor array, the excitation and image acquisition station further comprising a filter which filters light other than light emitted by the screen from the CMOS sensor array.

43. A method according to claim 31 wherein the light source is a broad band light source.

44. A method according to claim 43 wherein a filter is employed with the broad band light source which removes light that does not fall within a wavelength range of an absorption spectrum of the screen.

45. A method according to claim 31 wherein the excitation light contacting the screen comprises the wavelength range of 650 to 680 nanometers.

46. A method according to claim 31 wherein the light source comprises a member of the group consisting of a line generator, holographic optic, rotating prism, cold cathode fluorescent lamp, cylindrical lens and a row of light emitting diodes.

47. A method according to claim 31 wherein the excitation light across the width of the screen has a width of less than 100 μm at any instant.

48. A method according to claim 31 wherein the excitation light across the width of the screen has a width of less than 80 μm at any instant.

49. A method according to claim 31 wherein the excitation light across the width of the screen has a width of less than 60 μm at any instant.

50. A method according to claim 31 wherein the excitation and image acquisition station comprises a flange which functions to narrow a width of the region of excitation light formed across the width of the screen.

51. A method according to claim 31 wherein the excitation and image acquisition station comprises a cylindrical lens which functions to sharpen the focus of the excitation light.

52. A method according to claim 31 wherein the screen is moved past the excitation light by moving the screen over a surface of a platform.

53. A method according to claim 31 wherein the screen is moved past the excitation light by rotating a rotatable drum on which the screen is positioned.

54. A method according to claim 31 wherein the excitation light comprises multiple wavelengths of light within an absorption spectrum of the screen.

55. A method according to claim 31 wherein the excitation light comprises multiple wavelengths of light between 600 nm and 700 nm.

56. A method according to claim 31 wherein the pixelated sensor array has a dynamic range of at least 4000:1.

57. A method according to claim 31 wherein the pixelated sensor array can be read out more quickly than an integration time of the pixelated sensor array.

58. A method according to claim 31 further comprising filtering light from the optics prior to the light contacting the pixelated sensor array so that only light emitted by the screen contacts the pixelated sensor array.